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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/584,191

06/23/2006

Takeki Shirai

062714

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38834 7590 08/11/2011  
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EXAMINER

WAITS, ALAN B

ART UNIT

PAPER NUMBER

3656

NOTIFICATION DATE

DELIVERY MODE

08/11/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentmail@whda.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,191	<b>Applicant(s)</b> SHIRAI ET AL.	
	<b>Examiner</b> ALAN WAITS	<b>Art Unit</b> 3656	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2011.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 5-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 5-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Request for Continued Examination*

1. The request filed on July 6, 2011 for a Continued Examination (RCE) is accepted and a continued prosecution application has been established. An action on the RCE follows.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. **Claims 1, 2 and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 1, line 20, recites the limitation "the movable member has both side surfaces". There is a lack of antecedent basis for "side surfaces" in the claims. The claim should be rewritten to recite --the movable member has two side surfaces--.

### *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1, 2, 6 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacob U.S. 4,974,969 in view of Teramachi JP 61-223325.**

**Re clm 1, 2, 6 and 8**, Jacob discloses an actuator comprising a hollow track member (1, Fig. 1) having a slit (bottom of 1) extending in an axial direction thereof, a movable member (2, Fig. 2) disposed inside the track member to be movable along the track member, a drive mechanism (col. 2, line 25-35) for moving the movable member along the axial direction of the track member, the track member has in a section perpendicular to the axial direction of the track member a guide portion (portion where balls touch 2 and 1, Fig. 2) for guiding movement of the movable member and at least two extensions (portion of 1 below the horizontal diameter, Fig. 1) opposing to each other, each of the extensions extending from the guide portion so as to cover the movable member, the slit is formed between the opposing extensions, a width of the slit of the track member is narrower than a width of the movable member, an entire exposed outer periphery of the track member has a substantially circular-arc shape in the section, the track member is formed with a plurality of rolling member rolling grooves (8, Fig. 2) extending in the axial direction thereof as the guide portion, a number of rolling member (4, Fig. 2) are interposed between the rolling grooves of the track member and the movable member to be rollable therebetween, and the slit is formed at only one portion in a circumferential direction of the track member in a section perpendicular to the axial direction of the track member.

Jacobs does not disclose that an outer periphery of the movable member has a substantially polygon shape in the section, the movable member is formed with a plurality of loaded rolling member rolling grooves opposing to the rolling member rolling grooves, the movable member has both side surfaces to each of which two rows of the

loaded rolling member rolling grooves are formed, the two rows of loaded rolling member rolling grooves extend in the axial direction of the track member, and a first row of the two rows of the loaded rolling member rolling grooves is positioned in vertical direction with respect to a second row of the two rows of the loaded rolling member rolling groove.

Teramachi teaches an outer periphery of the movable member (152, Fig. 3) has a substantially polygon shape in the section, the movable member is formed with a plurality of loaded rolling member rolling grooves (grooves in 152 into which 143 sit) opposing to the rolling member rolling grooves, the movable member has both side surfaces (left and right halves of 152) to each of which two rows (left 143s and right 143s) of the loaded rolling member rolling grooves are formed, the two rows of loaded rolling member rolling grooves extend in the axial direction of the track member, and a first row of the two rows of the loaded rolling member rolling grooves is positioned in vertical direction with respect to a second row of the two rows of the loaded rolling member rolling groove. The advantage of the polygon shape of Teramachi prevents the movable member and the track member from touching, while the rolling grooves prevent circumferential or rotational movement between the track member and the movable member.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Jacob and provide an outer periphery of the movable member has a substantially polygon shape in the section, the movable member is formed with a plurality of loaded rolling member rolling grooves opposing to

the rolling member rolling grooves, the movable member has both side surfaces to each of which two rows of the loaded rolling member rolling grooves are formed, the two rows of loaded rolling member rolling grooves extend in the axial direction of the track member, and a first row of the two rows of the loaded rolling member rolling grooves is positioned in vertical direction with respect to a second row of the two rows of the loaded rolling member rolling groove for the purpose of preventing the movable member and the track member from touching as well as preventing rotational movement between the track member and the movable member, as suggested by Teramachi.

**6. Claims 1, 2 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai U.S. 2002/0144561 in view of Teramachi JP 61-223325 and Jacob U.S. 4,974,969.**

**Re clm 1, 6 and 8**, Nagai discloses an actuator comprising a hollow track member (12a, 12b and 12c, Fig. 2) having a slit (top section between walls 12b and 12c) extending in an axial direction thereof, a movable member (18) disposed inside the track member to be movable along the track member, a drive mechanism (28) for moving the movable member along the axial direction of the track member, the track member has in a section perpendicular to the axial direction of the track member a guide portion (portion where balls 76 touch 12c and 18, Fig. 3) for guiding movement of the movable member and at least two extensions opposing to each other, the slit is formed between the opposing extensions (12b and 12c, Fig. 2), the track member is formed with a plurality of rolling member rolling grooves (60a and 60b, Fig. 3) extending in the axial direction thereof as the guide portion, the movable member is formed with a

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plurality of loaded rolling member rolling grooves (62a and 62b, Fig. 3) opposing to the rolling member rolling grooves respectively, the movable member has both side surfaces to each of which two rows (60a, 60a, 60b and 60b, Fig. 9) of the loaded rolling member rolling grooves are formed, a number of rolling members (76, Fig. 3) are interposed between the rolling member rolling grooves of the track member and the opposing loaded rolling member rolling grooves of the movable member respectively to be rollable therebetween (Fig. 3 and 9), the two rows of the loaded rolling member rolling grooves extend in the axial direction of the track member (Fig. 9), and a first row (top 60a and 60b, Fig. 9) of the two rows of the loaded rolling member rolling grooves is positioned in vertical direction with respect to a second row (bottom 60a and 60b, Fig. 9) of the two rows of the loaded rolling member rolling grooves.

Nagai does not disclose that each of the extensions extending from the guide portion cover the movable member, a width of the slit of the track member is narrower than a width of the movable member, and an entire exposed outer periphery of the track member has a substantially circular-arc shape in section and an outer periphery of the movable member has a substantially polygon shape in the section.

Teramachi teaches an outer member (122, Fig. 3) and an inner member (152) interface where the outer member has extensions (lower portions of 122 that extend downward and inward) extending from guide portion to cover the inner member, a width of the slit (gap between the lower ends of 122) of the outer member is narrower than a width (length between bottom 143s) of the inner member and an outer periphery of the movable member has a substantially polygon shape in the section (152). The width of

the slit of the outer member being narrower than a width of the inner member of Teramachi provides for better protection of the inner moving member from foreign debris and other machine parts as well as more evenly distributing the load between the track member and the movable member, while the polygon shape of Teramachi prevents the movable member and the track member from touching.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Nagai and provide that each of the extensions extending from the guide portion cover the movable member, a width of the slit of the track member is narrower than a width of the movable member, and an outer periphery of the movable member has a substantially polygon shape in the section for the purpose of providing better protection from foreign debris and other machine parts as well as more evenly distributing the load between the track member and the movable member while preventing the movable member and the track member from touching, as suggested by Teramachi.

Nagai does not disclose that an entire exposed outer periphery of the outer member has a substantially circular-arc shape in section.

Jacob teaches an actuator comprising an entire exposed outer periphery (1, Fig. 1) of the outer member has a substantially circular-arc shape in section. The circular-arc shape section of Jacobs provides for a space saving design since the same diameter inner member can be held in a smaller outer member simply by changing the outer shape.



It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Nagai and provide that an entire exposed outer periphery of the outer member has a substantially circular-arc shape in section for the purpose of providing a space saving outer member, as suggested by Jacob.

**Re clm 2**, Nagai further discloses that the slit is formed at only one portion in a circumferential direction of the track member in a section perpendicular to the axial direction of the track member (Fig. 3 and 9).

**Re clm 7**, Nagai further discloses the drive mechanism being provided with a screw portion (32, Fig. 2) formed to the movable member and a screw shaft (28) to be screw engaged with the screw portion, the screw shaft penetrating the movable member, the screw shaft having a center line coincident with a center line of an output shaft of a drive source (14) rotating the screw shaft, and the drive source has an outer substantially circular shape in a section perpendicular to the axial direction of the track member.

**7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagai U.S. 2002/0144561 in view of Teramachi JP 61-223325 and Jacob U.S. 4,974,969 as applied to claim 1 and 2 above, and further in view of JP 61-29163.**

Nagai in view of Teramachi and Jacob discloses all the claimed subject matter as described above.

**Re clm 5**, Nagai does not disclose that the track is provided with a cover member expandable and contractible in the axial direction of the track member so as to entirely cover the track member in the section perpendicular to the axial direction of the

track member, and a portion of the movable member projecting over the slit of the track member penetrates the cover member.

JP163 teaches an actuator comprising a track member being provided with a cover member (16, Fig. 1) expandable or contractible in the axial direction of the track member so as to entirely cover the track member in the section perpendicular to the axial direction of the track member, and a portion (14, Fig. 1) of the movable member projecting over the slit of the track member penetrates the cover member. The cover member of JP163 provides protection to the device from dirt and debris.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Nagai in view of Jacob and provide that the track is provided with a cover member expandable and contractible in the axial direction of the track member so as to entirely cover the track member in the section perpendicular to the axial direction of the track member, and a portion of the movable member projecting over the slit of the track member penetrates the cover member for the purpose of protecting of the actuating device from dirt and debris, as suggested by JP163.

### ***Response to Arguments***

8. Applicant's arguments with respect to claims 1, 2 and 5-8 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the references teach away from each other based on the shapes, however, JP 61-223325 discloses a polygon movable member shape with a circular track shape. Thus, Applicant's argument is invalidated by JP 61-223325.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALAN WAITS whose telephone number is (571)270-3664. The examiner can normally be reached on Monday through Friday 7:30 am to 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Alan B Waits/  
Examiner, Art Unit 3656

/Thomas R. Hannon/  
Primary Examiner, Art Unit 3656